Household Technology and the Social Construction of Housework

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Historians and social scientists generally agree that the forces of industrialization and the growth of the market economy have progressively absorbed much of the household's economic function. Furthermore, popular belief assumes that the vestiges of old forms of production in the home will surely be eliminated by the application of technological rationality. Put another way, it is thought by the public and many academics that "technology," broadly defined, has "freed" women for other, nonhousework tasks—in particular, employment in the paid labor market. These assumptions are reflected in popular terminology such as "fast foods" (to save time), "convenience foods" (to increase ease of preparation), and "laborsaving devices" (conducive to easing the work load generally). This imagery has such power that much traditional research takes these effects for granted instead of demonstrating or disproving them empirically.

Yet even with the unprecedented growth of the market sector and the almost universal availability of certain items of household equipment and goods, recent studies show that labor in the home still accounts for approximately half of this country's total work time.[1] In this article our goal is to investigate the evidence concerning the effects of technological developments on household work. We believe that popular beliefs about the positive effects are inadequately sub-

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[1]Ismail Sirageldin, *Non-Market Components of National Income* (Ann Arbor: University of Michigan Survey Research Center, 1969).

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stantiated, and we present alternative explanations for the current structure of household work.

Productivity in the home cannot be calculated in the same way productivity in the market sector is computed. The output is not sold for a price or measured against the time spent as expressed in outputs per unit. The increasing dominance of the exchange economy has transformed the home from a center of both production and consumption into one primarily for consumption. Hence, we will define "household production" as work in the home, or household economic work; some activities are literally production, others are consumption and management. This definition includes the provision of both goods and services, although we recognize that the mix of these two components has changed over time: formerly the household produced a lot of goods and a fair amount of services, but today household work largely involves services and consumption. Furthermore, in this discussion we will use the terms "labor" and "work" synonymously.[2]

Technology is widely believed to have increased the convenience or efficiency of performing housework. We understand efficiency in this usage to be a summary indicator for reductions in time, exertion (or ease), and/or cost, and therefore we have divided our investigation of household production into examinations of technology's effects on each of these three factors.[3] Efficiency, along with rationality, is one of the two hallmarks of the ideology of technological development.[4] Although efficiency is often taken as an objective or goal in itself, especially by economists, it more properly represents a statement concerning the ability of particular means to achieve a goal. Thus, to talk about the efficiency of housework—that is, the saving of time or money or the easing of effort—requires that we understand the whole operational nexus and purpose of the household. However, household functions are very decentralized social phenomena.[5] Since the

[2]An important distinction between the two is made by Hannah Arendt in *The Human Condition* (Chicago, 1958). Labor is the cyclical, repetitive, and unending satisfaction of life's basic needs, consumption necessities. It produces no permanent products. Work relates to the production of artifacts, objects of some durability, for use rather than consumption. Work has a beginning and an end. In Arendt's terminology, "housework" was once both labor and work but today is almost solely labor. In fact, it probably embodies the clearest examples of labor, such as washing dishes, taking out garbage, and other endless chores.

[3]"Efficiency" is defined in *Webster's Ninth New Collegiate Dictionary* as "effective operation as measured by a comparison of production with cost (as in energy, time, and money)."

[4]Jacques Ellul, *The Technological Society* (New York, 1964).

[5]Scott Burns, *Home, Inc.* (New York, 1975).

degree to which a process is centralized may play a role in determining its efficiency, we must recognize the difficulty of sharing or coordinating household activities that are carried out by dispersed units. In addition, household chores occur on a small scale, involve the servicing of personal needs, and are labor intensive.[6] Even within the household, then, chores are inherently inefficient.[7]

Yet, internal household efficiency (and certainly equity) might be affected by technology if it could change the household specialization of labor or the way in which tasks of household maintenance are divided among members of that household. The practice in American households today is for women to do the largest proportion of these tasks, and there has been relatively little change in this over the last fifteen years.[8] Furthermore, the total time spent on housework either increased or remained stable between 1930 and the 1950s.[9] (We know relatively little about task sharing prior to this time.) Still, we might ask how changes in the specialization of labor *might* take place. There are several ways. First, some of the work could be accomplished by provision of equivalent market services. Options include employment of domestic help within the home; the use of fast-food and laundry services outside the home; or participation in communal services such as the group cooking proposed eighty-five years ago by Charlotte Perkins Gilman.[10] Second, the allocation of all housework tasks among household members could be rearranged, with a diminished proportion done by women. Related to this is the potential alteration of household labor demands so that housework would absorb a smaller percentage of women's total available work time. Such a reduction could occur because of smaller family size, lower standards of cleanliness, or the woman's adoption of other roles, such as that of paid employee outside the home.

[6]Lenore Davidoff, "The Rationalization of Housework," in *Dependence and Exploitation in Work and Marriage,* ed. D. L. Barker and S. Allen (London, 1976), pp. 121–51.

[7]Hildegard Kneeland, "Limitations of Scientific Management in Household Work," *Journal of Home Economics* 20 (May 1928): 311–14.

[8]Catherine W. Berheide, Sarah F. Berk, and Richard A. Berk, "Household Work in the Suburbs: The Job and Its Participants," *Pacific Sociological Review* 19 (October 1976): 491–518.

[9]Joann Vanek, "Time Spent on Housework," *Scientific American* 231 (November 1974): 116–20; Ruth Cowan, "A Case Study of Technology and Social Change: The Washing Machine and the Working Wife," in *Clio's Consciousness Raised: New Perspectives on the History of Women,* ed. Mary Hartman and Lois Banner (New York, 1974), pp. 245–53.

[10]Charlotte Perkins Gilman, *Women and Economics* (Boston, 1898; New York, 1966). See also Dolores Hayden, *The Grand Domestic Revolution* (Cambridge, Mass., 1981).

In regard to this last possibility, the conventional paradigm holds that adoption of new household technologies leads to an increase in women's labor-force participation by freeing them from housework. Although paid employment is associated with a reduction of the amount of time spent on unpaid work in the home, we must examine the evidence to see if technology caused this employment. Moreover, it is not clear that increased labor-force participation frees women from housework. One needs to ascertain both who performs the housework when a woman works outside the home and the woman's total number of work hours (paid in the labor force and unpaid in the household) under these conditions in order to determine if her labor-force participation actually changes the distribution of household chores. Therefore, we include the household specialization of labor as a fourth dependent variable (along with ease, cost, and time) when a change in the application of technology is considered as the independent variable.

If we ask which technologies can reasonably be said to have changed household work structure, it is clear that different technologies have varying impacts; how should we compare, for example, plumbing, the vacuum cleaner, and the wire whisk? We find it most useful to categorize household technologies by a typology which expands on one used by Heidi Hartmann,[11] distinguishing them on the basis of their form and level of capital investment into four major classifications:

(1) utilities: the technological infrastructure of the household—for example, running water, electricity, gas, sewerage—which functions continuously, is virtually universal, and is provided under special legal and regulatory plans;
(2) appliances: machines used in performing housework;[12]
(3) foods: new forms of packaging and preservation, as well as those subsumed under the rubric of "convenience";
(4) market-sector services: alternatives to household functions, such as garbage collection in lieu of incineration and fast-food restaurants or diaper services in lieu of cooking and laundering.

[11]Heidi Hartmann, "Capitalism and Women's Work in the Home, 1900–1930" (Ph.D. diss., Yale University, 1974).

[12]Appliances can be further disaggregated to distinguish between large ones and small ones involving different analytic elements such as initial cost, frequency of purchase, and frequency of use; or between durables and nondurables; or between hand tools used as direct extensions of manual labor and devices with electrical or other power augmentation. Our discussion will sometimes reflect these distinctions, although they are ignored in much of the previous research.

Our model is one which allows a test of the traditional notion that changes in technologies for the household have yielded benefits previously unavailable, particularly to women. Utilities, appliances, convenience foods, and market-sector services are believed to have reduced the *time* and *cost* of performing housework, to have increased the *ease* with which such tasks are performed, and to have diminished the *share* of these tasks normally allotted to adult women. Our test of this model entails a survey of research in several fields.

Within the realm of housework we have generally focused on food-related tasks—including production or purchase, storage, preparation, and cleanup—an area chosen because of the large amount of research compared with other aspects of housework and because food production continues to change considerably, thus displaying more visible effects. Our study is also delimited by the types of households which have been studied previously. As in much of social science research, the focus of technology studies has been on the "ideal" adult woman–adult man household, usually with children present, of the white middle class. It has rarely examined single-parent households or individuals living alone, for instance, though where possible we will note data on class and race variations.

Hypotheses and General Expectations

The traditional explanation of changes in technologies for the household (as for technologies elsewhere) is that new devices and techniques have been developed because they brought benefits not previously provided. New technologies usually do offer benefits, but any realistic assessment of their effects will show these to be mixed. Benefits are often experienced directly by only a portion of the population. Other sectors may reap ancillary benefits from the technologies, such as increased profits from marketing them. Still other sectors, however, can actually suffer adverse consequences including increased noise, psychological stress, or unemployment.

The idea of unalloyed benefits serves to facilitate initial technological development and subsequent diffusion through the population. Any negative effects are popularly ignored or else seen simplistically by the people adversely affected, believing these effects peculiar to them. For example, our investigations suggest that some "costs" associated with household technology changes have been accommodated by individual families or housewives under the assumption that they are individual—if not unique—burdens. An example is the new stresses associated with selecting specific equipment from a large marketplace array, learning to use it, storing it, cleaning it, and repairing it. More specifically, since much of this stress falls particularly

on the housewife, she tends to see these as "her" problems, which amplifies any existing feelings of inadequacy.

Only recently, with the confluence of various movements in consumerism, women's liberation, and technology assessment, has this traditional premise been subjected to a more rigorous analysis. The heightened contradictions in the structure of housework have facilitated this analysis. Adherents to these movements have pointed out that total time spent on housework has not declined in the last fifty years even though the availability of modern "conveniences" has increased. Despite the increasing entry of women into the paid labor force, the impact of new household technology may have made the prescriptive norm that "women's place is in the home" descriptively true both by increasing the number of hours required for household tasks and by (technologically) depriving working-class women of paying jobs as domestics, seamstresses, or laundresses. Clearly several structural trends, and not individual shortcomings, are responsible for this dilemma.

Our hypothesis, then, is that the effects of technological developments on housework have been both positive and adverse. We separate the applications of technology, our independent variable, into four categories—utilities, appliances, foods, and services—and examine their effects on four aspects of household labor, our dependent variable: time, ease, cost, and allocation of tasks among household members. At the same time we keep in mind these questions:

(1) Which individuals or groups actually reap benefits and which groups and individuals bear risks and/or costs? (Whose objectives are accomplished by technological changes?) This is both an economic and an ethical question.
(2) Do the technologies themselves (or some of them) have the results which are claimed for them—saving labor, time, and cost (i.e., "convenience")?
(3) When there are positive effects, what do people (especially women) actually do with the time, money, or personal energy thereby saved? Has the gender specialization of household labor actually changed?
(4) When there are negative results, for what objective or subjective reason are the technologies nevertheless utilized?[13] What are the technological effects on household worker alienation/satisfaction?

[13]For example, a 1968 survey of American housewives found that over half the respondents gave time as the most important reason for buying convenience foods while less than half mentioned the saving of work. Apparently it is more legitimate to save time through the use of convenience foods if that time is to be spent on the family than it is merely to lessen effort. Thus, time saving may be more important than effort saving to housewives. See Rosemary Scott, *The Female Consumer* (New York, 1976).

If technology has had mixed or negative results, new strategies for social structural change and reallocation of household labor will be necessary.

Sources of Evidence

Since no one discipline addresses all of the issues above, we have drawn on information from several fields. A multidisciplinary approach does not guarantee that every question can be answered currently, yet such an approach carries us further than would any one method alone. In this section, we outline the kind of evidence available within the literature of each discipline.

Historical literature documents which technologies have been used over time. Work by Ruth Cowan and Susan Strasser relies primarily on content analysis of women's and business magazines to examine changes in kitchen technologies.[14] Other perspectives are provided by Gwendolyn Wright and by Barbara Ehrenreich and Deirdre English, who look at the rise of the domestic science movement at the end of the 19th century and how this encouraged women's interest in new kitchen technologies.[15] On the whole, few historical works examine the normative or ethical issues involved in technological change.[16] Did women welcome or resist change? Were changes the result of choice or of the social requirements of the exchange economy?

In contrast, work in anthropology helps set the context to explore the interaction between cultural values and particular items in the material environment.[17] Yet most small-scale material innovations

[14]Ruth Cowan, "A Case Study of Technology and Social Change: The Washing Machine and the Working Wife"; "The 'Industrial Revolution' in the Home: Household Technology and Social Change in the 20th Century," *Technology and Culture* 17 (January 1976): 1–23; "Two Washes in the Morning and a Bridge Party at Night: The American Housewife between the Wars," *Women's Studies* 3 (1976): 147–72; "From Virginia Dare to Virginia Slims: Women and Technology in American Life," *Technology and Culture* 20 (January 1979): 51–63; Susan Strasser, *Never Done: A History of American Housework* (New York, 1982).

[15]Gwendolyn Wright, "Sweet and Clean: The Domestic Landscape in the Progressive Era," *Landscape* 20 (October 1975): 38–43; Barbara Ehrenreich and Deirdre English, *For Her Own Good: 150 Years of the Experts' Advice to Women* (Garden City, N.Y., 1978).

[16]For exceptions, see Martha Moore Trescott, ed., *Dynamos and Virgins Revisited: Women and Technological Change in History* (Metuchen, N.J., 1979); Sigfried Giedion, *Mechanization Takes Command* (New York, 1948); Bettina Berch, "Scientific Management in the Home: The Empress's New Clothes," *Journal of American Culture* 3 (Fall 1980): 440–45.

[17]Marvin Harris, *Culture, People, Nature* (New York, 1975); Marvin Harris, *The Rise of Anthropological Theory* (New York, 1968); Marshall Sahlins and Elmer Service, eds., *Evolution and Culture* (Ann Arbor, Mich., 1960); Marshall Sahlins, *Stone Age Economics* (Chicago, 1972); Autumn Stanley, "Daughters of Isis, Daughters of Ceres: Women Inventors in Agriculture" (Paper presented at the annual meeting of the National Women's Studies Association, Bloomington, Ind., 1980).

have been largely ignored by ethnographers, particularly those items associated with women and with kitchen activities.[18]

Within home economics two areas are of interest: research on housework and research on food practices. Studies of housework, although numerous, are unfortunately dominated by the ideas of "household engineering." The pioneering work of Christine Frederick[19] narrowed the problems of housework research to the application of scientific principles of efficiency; subsequent research was limited to how work in the home should be performed, with little attention to why it is done. While Steidl and Bratton have attempted to explore the affective and cognitive dimensions of housework, they too fail to go beyond the problems of efficiency.[20] Consequently, their research, in keeping with the home economics tradition, lacks a broader attempt to situate housework in a social or cultural context.

Unlike housework research, the literature on food practices recognizes the importance of normative questions in the preparation, consumption, and storage of food.[21] But perceiving that behavior is value laden is one thing; explaining what determines these values is another. Both the housework and food-habits research are limited by their purpose and the probable absence of intent to address fully the question of structural changes within the economy or household, which we address here. There is particular difficulty in finding data on ethnic or class differences in the normative mode of carrying out housework. Research by Ehrenreich and English suggests that such differences exist.[22] But no research has been done on the impact of such change on different ethnic or economic groups, either in terms of actual rate of adoption of new kitchen technologies or food types or in the change of prescribed behavior associated with such actual changes.

The "new home economics" differs from the prescriptive approach of the earlier home economics literature in seeking to apply mi-

[18]Support for the existence of this problem in ethnographies is provided by H. R. Bernard and J. Pelto, *Technology and Social Change* (New York, 1972).

[19]Christine Frederick, "The New Housekeeping," serialized in the *Ladies' Home Journal* (September–December 1912); published by Doubleday (Garden City, N.Y., 1913).

[20]Rose Steidl and Esther Bratton, *Work in the Home* (New York, 1968).

[21]W. J. Fewster et al., "Measuring the Connotative Meaning of Food," *Home Economics Research Journal* 2 (September 1973): 44–53; Kathryn Kolasa, "Participant Observation in Nutrition Education Program Development," *Journal of Nutrition Education* 6 (July–September 1974): 89–92; Virginia Steelman, "Attitudes toward Food as Indicators of Subcultural Value Systems," *Home Economics Research Journal* 5 (September 1976): 21–32.

[22]Ehrenreich and English (n. 15 above).

croeconomic theory to household production. Drawing on the early works of Margaret Reid,[23] it views housework as a production function in which the utilities of a household unit are maximized, using differential allocation of individuals' labor, under the constraints of income and working time available.[24] These studies assume that, as income rises, families will usually substitute durable goods for time. Recent research by Myra Strober suggests, however, that this may not be the case for working women.[25] Furthermore, research by Richard and Sarah Berk indicates that the types of labor substitution which should occur within a family that is maximizing its utilities simply do not occur.[26] Finally, the values and tastes which inform consumer choices, as well as the employment status of women, need to be examined.

We have also considered the literature in marketing, particularly the area concerned with consumer choice of household durables and food products. We know that sex roles influence greatly the purchase of certain items. Wife-dominated decisions such as those involving food, small appliances, or medicinal purchases reflect female activity in the home. Larger kitchen appliances appear to entail more joint decision making, perhaps because of cost.[27] Husbands play the major role in the purchase of "brown" appliances (e.g., television, stereo) that do no housework in contrast to "white" ones that do. In more recent research, we find that, where the wife is employed, the husband appears to be moving into the formerly "female" area of food purchase.[28] There is a hypothesis that when income contribution is shared there will be a relative decline in traditional masculine and feminine areas of decision making, although the significance of this for marital equality has been challenged.[29] This information suggests certain trends, but most research available on product choice and decision making measures only gross influence and fails to investigate

[23]Margaret Reid, *Economics of Household Production* (New York, 1934).

[24]Theodore Schultz, ed., *Economics of the Family* (Chicago, 1974).

[25]Myra Strober, "Wives' Labor Force Behavior and Family Consumption Habits," *American Economic Review* 67 (February 1977): 410–17.

[26]Richard A. Berk and Sarah F. Berk, "A Simultaneous Equation Model for the Division of Household Labor" (Paper presented at the annual meeting of the American Association for the Advancement of Science, Boston, 1976).

[27]C. R. Gisler, "Is the Buying Influence of Men Understood?" *Printer's Ink* 224 (September 1948): 39.

[28]F. I. Nye and Lois W. Hoffman, *The Employed Mother in America* (New York, 1963).

[29]See D. M. Wolfe, "Power and Authority in the Family," in *Selected Studies in Marriage and the Family,* ed. R. F. Winsch, R. McGinnis, and H. R. Barringer (London, 1963); and Dair Gillespie, "Who Has the Power?" *Journal of Marriage and the Family* 33 (August 1971): 445–48.

how and why such influence is exerted.[30] Furthermore, knowing who purchased an appliance or tool does not tell us who uses it with the most regularity. Unfortunately, studies of product preference and attitudes are carried out by private marketing firms and generally are not available to the public. Brief summaries of these studies occasionally appear in trade journals, but, with few exceptions, information on education, employment, or ethnic background of the respondents is absent. Overall, marketing literature lacks sensitivity to the complex normative issues surrounding the purchase of kitchen equipment and food products.

Finally, sociological research is of both methodological and substantive interest to us. Much of the research is based on household observations and multi-indicator survey techniques. Many studies look at specialization of labor and types of housework, although few list the actual technologies used to do the work.[31] Research has often focused on the housewife role and more recently on the content of housework.[32] Studies of the job are useful in breaking down tasks of food management into component parts and in examining social class differences in time spent on housework.[33] Examinations of the housewife role have considered levels of personal satisfaction and how these feelings relate to role content.[34]

In sum, there is information on technologies available to the home, on household specialization of labor, on cost/ease/time associated with certain technologies, and on product choice. There is almost no information on variations across ethnic groups and only limited data across economic groups. Only anthropology has dealt with the relevant normative questions, but not primarily in the area of small-scale technologies. In addition, we should note that literature which examines large-scale changes over time in the economy and technology tends to ignore the impact of such changes on household work structure.

[30]Harry L. Davis, "Measurement of Husband-Wife Influence on Consumer Purchase Decision," *Journal of Marketing Research* 8 (August 1971): 105–12.

[31]For an exception, see Charles A. Thrall, "Household Technology and the Division of Labor in Families" (Ph.D. diss., Harvard University, 1970).

[32]Helena Lopata, *Occupation: Housewife* (New York, 1971); Sarah F. Berk, Richard A. Berk, and Catherine W. Berheide, "The Non-Division of Household Labor," mimeographed (Evanston, Ill.: Northwestern University, 1976); Ann Oakley, *The Sociology of Housework* (New York, 1974).

[33]Joann Vanek, "Household Technology and Social Status: Rising Living Standards and Status and Residence Differences in Housework," *Technology and Culture* 19 (July 1978): 361–75.

[34]Berheide et al. (n. 8 above); Oakley; Mirra Komarovsky, *Blue-Collar Marriage* (New York, 1962); Myra Marx Ferree, "Working-Class Jobs: Housework and Paid Work as Sources of Satisfaction," *Social Problems* 23 (April 1976): 431–41.

Understanding these limitations to the evidence available, we will now review four technological systems—utilities, appliances, foods, and market services—in terms of their effects on each of our dependent household production variables: time, ease, cost, and the specialization of labor.

Technological Impacts on Ease of Housework

Ease of housework is a complex cluster of both objective and subjective elements that includes reducing physical fatigue, increasing the pleasantness of performing tasks, adding variety as a means of stimulating interest, guarding against boredom, and enhancing feelings of self-worth. Thus, ease of housework and reduction of time spent on housework are not conceptually identical. Empirically, studies have indicated that, even when a saving of time is demonstrated by the use of new appliances, there is not always evidence that effort or fatigue is reduced.[35] However, many people—houseworkers and researchers alike—make no distinction between time and ease. Where the two are distinguished, Heidi Hartmann has suggested that the easing of effort is more important to consumers than is the saving of time.[36] Other research indicates that reliance on convenience foods to save effort is common but varies with stage in the life cycle.[37] Data on appliance usage are more mixed.

In the light of the complex nature of "ease," we begin by restating the traditional notion that new household technologies are adding interest to tasks and fostering a more cheerful attitude in the houseworker.[38] Unfortunately, this does not distinguish between the set of objective tasks which constitutes housework and the social role of housewife.[39] From advertising in women's magazines and on television, we can infer the assumption that technology will make work easier and more pleasant and therefore will make the housewife happier. But studies of worker alienation in other kinds of jobs note that it is important to distinguish between the task being performed and

[35]M. K. Heiner and N. M. Vedder, "Studies in Dishwashing Methods: An Attempt to Apply Methods of Job Analysis to a Household Process," *Journal of Home Economics* 22 (October 1930): 393–407.

[36]Hartmann (n. 11 above).

[37]Thomas W. Anderson, *The Convenience-oriented Consumer,* University of Texas at Austin, Studies in Marketing no. 14 (Austin, 1971).

[38]For example, Committee on Household Management and Kitchens, President's Conference on Homebuilding and Home Ownership, *Household Management and Kitchens* (Washington, D.C., 1932), pp. 30–44.

[39]A useful distinction made by Nona Glazer-Malbin, "Housework," *Signs* 1 (Summer 1976): 905–22.

the context of the workers' routine. Housework is basically manual, and mechanization of the tasks only means the worker must now tend the machines. Since much of the work in the modern home is socially isolated, involves monitoring several activities at once, and has many emotional burdens which are not subject to rationalization or mechanization,[40] there may be inherent limits on the degree to which technology may actually ease housework.[41]

Increased ease of tasks does not guarantee increased satisfaction with the housewife role. Unfortunately, there are few data to consult here. One study found, however, that ownership of equipment and other amenities may affect the way particular tasks are performed or make them more interesting, but it does not create satisfaction with housework as a whole.[42] Satisfaction or dissatisfaction was unrelated to the number of appliances owned; respondents registered dissatisfaction over the lack of social interaction and the monotony inherent in the housewife role. In other studies we find that middle-class women feel primarily "neutral" about housework—neither interested nor uninterested—but similar to alienated blue-collar workers.[43]

Insofar as household technologies are designed to support the home system, and thereby keep women economically marginal to the larger society, they may actually increase dissatisfaction with housework. Several studies have documented women's preference for paid employment over housework.[44] The debilitating effects of being "just a housewife" are no longer myth or speculation; the National Center for Health Statistics has found that fewer working wives suffered from nervousness, insomnia, trembling and perspiring hands, nightmares, headaches, dizziness, and heart palpitations than did a matched sample of nonemployed wives.[45] The monotony of the home setting, the repetition of menial tasks, and the isolation and lack of stimulation from other adults have been identified as sources of

[40]Allison Ravetz, "Modern Technology and an Ancient Occupation: Housework in Present-Day Society," *Technology and Culture* 6 (Spring 1965): 256–60.

[41]Although women would apparently like this to occur; see "Blue Collar Wives Seek Convenience," *Advertising Age* 44 (October 8, 1973): 33; "How Housewives Would Design Kitchens If They Had the Chance," *Electrical Merchandising,* May 14, 1962, p. 29.

[42]Oakley (n. 32 above).

[43]Berheide et al. (n. 8 above); Phyllis Chesler, *Women and Madness* (New York, 1972).

[44]E. Mostow, "A Comparative Study of Work Satisfaction of Females with Full-Time Employment and Full-Time Housekeeping," *American Journal of Orthopsychiatry* 45 (1975): 538–48; Ferree (n. 34 above); Lillian Breslow Rubin, *Worlds of Pain: Life in the Working-Class Family* (New York, 1976).

[45]National Center for Health Statistics, *Selected Symptoms of Psychological Distress* (Washington, D.C., 1970), pp. 30–31.

chronic fatigue in full-time housewives.[46] And the problem is not confined to middle-class women, for an increased incidence of this "housewife syndrome" has also been found among working-class and native American women.[47]

Thus far, we can see that the traditional assumption that easier work will necessarily increase housewives' role satisfaction is incorrect. Next we turn to question whether specific technologies actually ease the housework itself, independent of their impact on the housewife's role.

Although it is difficult to prove, utilities have probably changed household work more than any other technical improvement because they eliminated several truly burdensome tasks. Hot and cold running water ended the pumping, carrying, and heating of water; electricity and gas eliminated chopping wood, carrying coal, and continual stoking and cleaning of stoves. But precise impact is hard to measure for several reasons. First, prior to 1910, we have few data on total time and effort expended on housework before and after the installation of utility systems. Second, since it is not clear how to define housework for the preindustrial period, it is hard to judge whether the burden of housework was subsequently eased. For example, if housework is anything done in the home, chopping wood for heating might not have previously been considered as such; but if it is defined as unpaid work or work necessary to maintain the home, the installation of centralized heating certainly would have eased housework. Third, some evidence indicates that the total volume of housework has not declined, but this is not inconsistent with utilities having had a profound impact on the allocation of labor within households.

It is likely that effort saved on some tasks was merely transferred to other activities carried on by women. Time-budget studies from later periods which compare rural/urban time allocations all show an increase in time spent on purchasing, management, and child care, and a decrease in time spent on meal preparation.[48] Some of these changes over time may be due to appliances rather than utilities, but it is likely that utilities eliminated certain tasks to make room for others. Furthermore, electrification undoubtedly fostered second-level effects by facilitating the development of many appliances. Rising stan-

[46]Betty Friedan, *The Feminine Mystique* (New York, 1965).

[47]Billye Fogleman, "Housewife Syndrome among Native American Women," *Urban Anthropology* 4 (Summer 1975): 184.

[48]Vanek (n. 9 above); W. F. Ogburn and M. F. Nimkoff, *Technology and the Changing Family* (Cambridge, Mass., 1955); John Robinson and Philip Converse, "Social Change Reflected in the Use of Time," in *Human Meaning of Social Change,* ed. Angus Campbell and Philip E. Converse (New York, 1972).

dards of cleanliness increased housework volume, and the task-extending nature of small- and medium-sized appliances may have offset many of the original gains in ease of effort attributable to utilities. While technologies can both give and take away, it seems safe to conclude that utilities eased some of the effort required for heating homes and providing hot water.

How do small- and medium-sized appliances make tasks more difficult instead of easier? Even *Fortune* magazine has cited the fact that an array of separate appliances requires a great deal of time and work to take out of the cabinet, put together, use, and clean up.[49] Cleaning kitchen appliances can become a major project for the conscientious housewife, since their plastic moldings and ridges, chrome trim, and doodads all seem designed to harbor dirt.[50] Repair of appliances has become more difficult and mysterious, often costing almost as much as purchasing the appliance in the first place. With the increased specialization of household machinery, the difficulty of understanding the actual mechanical and/or electrical operation has increased, so that one who is knowledgeable about how a certain type of appliance operates may not be able to understand another, much less fix it. Furthermore, much of our equipment embodies a planned obsolescence to sustain demand and necessitates repairs or replacement, which certainly requires additional effort.[51] There is also an increased amount of noise in the house due to appliance operation.

These factors all argue against the view that household appliances necessarily ease the performance of housework. "Laborsaving devices" may actually create new forms of labor and increase job fatigue.

We next examine food technologies and their effects on easing housework. Unfortunately, our assessment must be based primarily on speculation for two reasons. First, most studies focus on time saved rather than on effort and ease. Second, comparisons of "starting from scratch" versus convenience foods have not taken into account shopping, planning and management time, or meal types. The entire cooking and eating process has not been studied, only a portion of it. Thus, these studies report (small) time differences regarding only part of the meal-preparation process. To the extent that convenience foods require fewer operations from refrigerator to table and necessitate keeping fewer ingredients on hand, they may save some effort;

[49]"Why Nobody Is Happy about Appliances," *Fortune* 85 (May 1972): 180–83; on storage or retrieval, see "How Housewives Would Design Kitchens If They Had the Chance."

[50]Julia Kiene, "Beware the Bridge Table," *Electrical Merchandising,* July 1958, p. 30.

[51]Vance Packard, *The Wastemakers* (New York, 1960); see also "Why Nobody Is Happy about Appliances."

but to the extent that they impose different planning, shopping, and storage activities, they may require more exertion. However, certain food-related technologies promise to make formerly elegant or exotic experiences readily available to the masses, fostering changing expectations similar to those discussed above for appliances.[52]

The final independent variable that might have an impact on ease of household work is market services, which could move housework outside of the home instead of having each household performing every task. This alternative has never been fully developed. William Baumol suggests that, at least in the post–World War II period, in an economy that primarily produces services for capital and commodities, such commodities combined with women's labor at home prevented the growth of labor market services relevant to housework.[53] As a general pattern this may still hold true, although the number of services provided varies with the household task. Laundry services and home food delivery appear to have declined, while eating out (which became necessary and acceptable during World War II with the mass entry of women into the labor force) appears to be a long-run trend.

This trend is supported by several factors. First, there is a continued increase in the rate of married women's labor-force participation. Second, there is real convenience to eating out. Restaurant sales soared as a result of this ease, combined with the fact that between 1972 and 1975 the cost of eating at home rose faster than that of eating out.[54] Third, although the relative cost advantage of eating out was subsequently reversed, most women do value their own time and ease. When Mrs. Average Housewife tells us on a national commercial that she likes her chicken "finger lickin' good" because her time is valuable, we can suspect that she knows a bargain when she sees one; after fifty years of convenience foods and laborsaving devices, women have come to agree with the rationale for the fast-food industry—that true convenience comes only when someone else does the work.

However, there are also limitations on the potential for market services' replacing home food preparation. There have been massive advertising campaigns by supermarkets and the appliance industry aimed at pointing out that it is now cheaper to eat at home, if the cook's time is not counted. Supermarkets know that they are facing a

[52]This was once true even for the prosaic tin can; see Karen de Witt, "The Technology That Revolutionized Eating," *New York Times,* November 7, 1979.

[53]William Baumol, "Macroeconomics of Unbalanced Growth—the Anatomy of Urban Crisis," *American Economic Review* 57 (June 1967): 415–26.

[54]Charles Vaugh, "Growth and Future of the Fast Food Industry," *Cornell Hotel and Restaurant Administration Quarterly* 17 (November 1976): 18.

major threat. (In the next few years there will be over 1.5 fast-food restaurants for every supermarket in America and a total of 30,000 convenience stores offering fast-food takeout service.)[55] And, while one can purchase high-protein meals at fast-food restaurants, overall quality and nutrition remain more controllable with home cooking. But it is cost considerations that set the strongest limits: inflation cuts back on the ability of middle- and lower-income groups to eat out. Among higher-income groups, the trend may be different, with women combining eating in better restaurants with more time spent in gourmet cooking at home.

On the whole, we may summarize by noting that, where available, market services appear to have eased housework. Convenience foods may also help reduce fatigue. As for utilities, we can conjecture that they did reduce fatigue but that their secondary effects created more housework. None of these technologies is likely to have made housework more pleasant or varied. Satisfaction studies also indicate that technology has not affected the housewife's perceptions of self-worth. Evidence about appliances is the most mixed and will be taken up again in the section on time below.

Technological Impacts on Cost of Housework

We have found the least information in the area of cost-effectiveness of household technologies. The majority of data are on appliance and food technologies, and most of this information is on cost changes during the most recent decades. We know little about how utilities relate to cost. Much of the household work now done by running water, electricity, or oil and gas, and paid for in monthly bills, was once done by individuals pumping water, chopping wood, or hauling coal. The cost of this labor is hard to measure and compare with current dollar outlays. We can make better cost measurements and studies of changes over time for the recent period. For example, no one can ignore the increase in cost of home heating in the last few years and the concomitant need for supplementary technologies such as insulation to offset these costs. Undoubtedly some of those costs are being met with the labor of family members who install insulation themselves (or who chop, split, and carry fuel for wood stoves).

More studies have been done of large- and small-scale appliances, though these primarily address saving time rather than cost. The kitchen appliance industry has felt threatened by the trend toward eating meals away from home and has recently been tailoring its wares

[55]"Super Markets Competing for Fast Food Dollar," *Santa Barbara News-Press,* October 9, 1977.

to compete with fast-food outlets.[56] Small deep-fat fryers, single and double hamburger makers, and electric hot dog cookers are being marketed in an effort to bring the fast-food taste into the home. For the affluent consumer, the single professional, and the full-time homemaker, another line of goods has been developed with more sophisticated multipurpose food processors, crepe makers, electric cookie and canapé makers, electric woks, and crock pots; apparently higher-income groups are combining eating in expensive restaurants with more elaborate cooking at home. For others who are in the home full time, cooking has become a creative outlet or a chance to improve the nutritional content of meals. As usual, there are few cross-ethnic or racial data; what little evidence exists concerns black families, which have been found to purchase appliances or convenience foods at a slower rate than whites of the same income level,[57] preferring to spend money in other ways.

The next section will indicate that appliances do not appear to save time and are normally quite expensive. Therefore we might ask, Who buys appliances? The discussion above hints at the answer: white households with higher incomes and/or a full-time homemaker. Why are they bought? First, people believe that appliances save time. Second, appliances have symbolic value for men and for women. Women often see the housewife role as a supportive one, performed out of a sense of duty rather than for money. If a woman believes that the latest equipment increases the quality of her work and in turn the quality of home life, she has a powerful incentive to want a well-equipped home. Since work in the home is emotionally charged, its quality is not subject to the same criteria of efficiency and technological rationality as is work in the paid labor force. Male identity is also involved. Within the bounds of traditional sex roles and family power, the domination of males rests on an ability to provide a comfortable standard of living (or even luxury items) for their families. Thus men, too, see value in household technology. Furthermore, we know that much household technology is bought by men for women, sometimes as gifts. The ability to give may be a way of expressing male dominance to a spouse who does not have equal purchasing power. However, to date we have virtually no rigorous data on kitchen appliances as gifts, on who decides to purchase appliances, or on the motivations for such purchases.

Among food technologies, convenience goods have important ef-

[56]"Fast Food Chains," *Consumer Reports* 44 (September 1979): 508–13.

[57]Dorothy Newman and Dawn Day, *The American Energy Consumer: A Report to the Energy Policy Project of the Ford Foundation* (Cambridge, Mass., 1975); Raymond Bauer and Scott Cunningham, *Studies in the Negro Market* (Cambridge, Mass., 1970).

fects on costs of housework. The Department of Agriculture found, for example, that 64 percent of the processed foods it studied were priced higher than the equivalent amount of homemade food.[58] In another Department of Agriculture study, of 158 convenience foods examined, only forty-two cost less than their fresh or home-prepared counterparts. For eighty of those that cost more, the work time saved and its economic value were determined; this amounted to 60¢ or less per hour for 53 percent of the eighty convenience items, 61¢ to $1.20 per hour for 31 percent of the items, and more than $1.20 per hour for the remaining 16 percent. While these may sound like significant savings, making up for the extra purchase price, only 1 percent of the items saved more than ten minutes, and 80 percent saved five minutes or less.[59] In a 1971 book, Sidney Margolius claimed that in cases where time is saved, the time may be valued at approximately $4.30 per hour.[60] The economic worth of this factor would depend on how much time, on the average, is actually saved.

On the whole, convenience foods save some time but cost more than home-prepared foods. Until recently, consumers were willing to pay the extra costs, but now they are more wary. Increases in food prices have led to the replacement of the canned soups, frozen entrées, and prepared desserts in the average market basket with fresh fruits and vegetables, cheeses, and so on. The consumption of canned fruits and vegetables also declined between 1972 and 1977, in spite of efforts to stimulate demand.[61]

To some extent, these changes in consumption patterns may be votes against the nutritional deficiencies of convenience foods, since the average person has been eating several pounds of artificial chemicals a year in prepackaged foods. But there are other reasons that convenience foods may be spurned. Even though there are now ersatz ethnic convenience foods, a mass market tends to eliminate ethnic variety.[62] While anthropological studies have shown the importance of food in maintaining ethnic identity, we do not know how rapidly and in what manner majority-culture American food preferences affect subculture eating patterns or ethnic identification. At the

[58]"More Foods Today Are 'Fresh' from Factories and Quick to Prepare," *Wall Street Journal,* June 21, 1977.

[59]Harry Harp and Denis Dunham, "Comparative Costs to Consumers of Convenience Foods and Home-prepared Foods," U.S. Department of Agriculture Market Research Report 609 (Washington, D.C., 1963).

[60]Sidney Margolius, *The Great American Food Hoax* (New York, 1971).

[61]*Business Week,* January 17, 1977, p. 81.

[62]Waverly Root and Richard de Rochement, *Eating in America* (New York, 1976); Stuart Ewen, *Captains of Consciousness: Advertising and the Social Roots of the Consumer Culture* (New York, 1976).

turn of the century, public school home economics classes were intended to teach nutrition as well as cleanliness and thrift to poor and especially immigrant children. One effect was to change ethnic cooking styles along with the nutritional balance. A recent study of Asian Indian academics in the United States found that many traditional dietary restrictions have been dropped.[63] Husbands, who were in daily contact with Americans, changed their eating patterns faster than did their homebound wives. About other groups we know less. Still, the reemerging sense of cultural heritage among many ethnic and racial groups probably has contributed to the recent trend away from convenience foods. In sum, while time may be saved by convenience foods, they cost extra money, probably are less nutritious, and are more ethnically homogeneous than home-prepared meals.

The final technological impact on cost of housework is that of market support services. Within the food industry we find that in 1965 one meal in four was eaten away from home. A decade later the number was approximately one in three, with some experts predicting it to hit one in two in the near future.[64] Supermarkets are feeling the competition; the food service industry's share of the food dollar is now 42 percent, with fast foods seeing the quickest growth.[65] Eating out appears to be a long-run trend, although it will be affected by inflation and disposable income levels. It certainly seems unlikely that market services will entirely replace home food preparation within our current economic system.

The long-term cost advantage of food services and restaurants probably will depend on how women's time is valued. As women's participation in the paid labor force increases, their time becomes of potentially greater value. This would make home preparation costs increase and might give eating out a cost advantage such as it had in the early 1970s. However, we must expect class variation in response to women's paid work. If working women are primary wage earners, or providing a second income to cope with inflation, family income may not be high enough to allow eating out, and women's "cheaper" labor will be used to cook. But if a wife's paid work more than compensates for inflation and increases the options available to the household, her time at home may be seen as more important. Furthermore, as restaurant prices rise, working-class families will be more likely to eat at home, thereby saving money, while expending women's labor. At the same time, families with greater resources can better

[63]Santosh Gupta, "Changes in Food Habits of Asian Indians in the United States," *Sociology and Social Research* 60 (October 1975): 87–99.

[64]Vaugh (n. 54 above).

[65]Lee Flaherty, "Change in Woman's Status Spurs Battle of Supermarkets vs. Fast Food Chains," *Advertising Age,* May 23, 1977, p. 158.

afford to eat out even as prices rise. The pattern is similar when more labor of other kinds is needed at home: professionally employed women will pay for outside help, while clerically employed women will get unpaid labor from family members.[66]

On the whole, the popular belief that technology makes household work cheaper is not supported sufficiently. There are no clear measures of the impact of utilities. Appliances and convenience foods appear to be more expensive, although the latter may save some time. Only market services seem potentially cheaper than work in the home, but this is contingent on placing an economic value on the homeworker's labor.

Technological Impacts on Time Spent in Housework

There exist some technology-specific studies on the saving of time, and, using the typology previously set forth, we can look at these within each of the categories—utilities, appliances, foods, and market services.

Data on utilities are too slim and contradictory to warrant conclusions, especially regarding food preparation. In one study comparing Eastern European provincial households without running water to urban households having not only running water but mechanical amenities, there was no significant difference in the total time spent in housework.[67] Another study claimed that running water saved between one-and-a-half to two hours per day in pumping and heating functions.[68] A third study considered the daily time differential for dishwashing between fifty homes equipped with running hot and cold water and forty-four homes with no pump or running water in the kitchen, concluding that the amount of time spent in the two types of homes was the same, 1.6 hours per day, and also that running water did not save time in meal preparation.[69] A fourth study supported this conclusion: the acquisition of amenities affects the expenditure of time very little[70]—this despite the contrary beliefs of many people (including many who actually lived through the technological changes).

[66]S. S. Angrist, "Socio-Economic Differences in How Working Mothers Manage Work, Childcare and Household Tasks," *Social Science Quarterly* 56 (March 1976): 631–37.

[67]Alexander Szalai, "The Situation of Women in the Light of Contemporary Time-Budget Research" (Paper presented at the UN World Conference of the International Women's Year, Mexico City, 1975).

[68]Mary Rowe, "The Length of a Housewife's Day in 1917," *Journal of Home Economics* (December 1917, reprinted in October 1973 issue).

[69]Inez Arnquist and Evelyn M. Roberts, *The Present Use of Work Time of Farm Homemakers,* Agricultural Experiment Station Bulletin 234 (Pullman, Wash., 1929).

[70]Committee on Household Management and Kitchens (n. 38 above).

Although these studies suggest that running water has no impact on time spent in housework, we must remember that they were conducted before the diffusion of many modern devices dependent on household utilities and with limited samples of farm households. We assume that utilities *did* save time on tasks predating the introduction of those utilities. The problem in documenting this assumption is that the time saved by the introduction of utilities was applied to other household tasks, many of them newly developed. In other words, while some activities are eliminated with the introduction of utilities, others are added (especially because of concomitant increased urbanization and industrialization). Thus one could argue that, since food service had not previously been widespread, the introduction of utilities was a primary force behind the realized decline in meal preparation time, but in terms of total time urban women were no closer to liberation from housework than their rural sisters.

Turning to appliances, we find that virtually the only machines which have been studied in detail are mechanical and electrical dishwashers. Most studies show a reduction in time spent dishwashing with the use of appliances; however, the figures for the time spent in various modes of dishwashing vary among the studies, which were conducted over a forty-year time span. The most recent found the time expended to be 4.9 hours per week with dishwashers and 6.3 without.[71] The figures from a 1930 study were twenty-six minutes and forty-four seconds per day washing with a portable machine, twenty-two minutes and thirty-one seconds per day washing by stationary machine, and thirty-eight minutes and eight seconds washing by hand; while a 1956 study indicated thirty-six minutes a day with a dishwasher and some hand rinse as compared with one hour and thirteen minutes per day solely by hand.[72] There are a few other studies of individual appliances. One indicates that a gas stove may save a half-hour per day over a coal range because there is no need to clean up coal dust or carry out ashes, another that modern (1929) plumbing, electricity, and equipment saved two hours per day for meal preparation and cleanup and 0.7 hours for routine cleaning and care of fires.[73]

We know that in some middle-class families there is a small positive correlation (.20) between number of appliances and household work

[71]Florence Hall and Marguerite Schroder, "Time Spent on Household Tasks," *Journal of Home Economics* 62 (January 1970): 23–29.

[72]Heiner and Vedder (n. 35 above); Elaine Weaver, Clarice Bloom, and Ilajean Feldmiller, *A Study of Hand vs. Mechanical Dishwashing Methods,* Agricultural Experiment Station Bulletin 772 (Kent, Ohio, 1956).

[73]Rowe; Maude Wilson, *Use of Time by Oregon Farm Homemakers,* Agricultural Experiment Station Bulletin 256 (Corvallis, Oreg., 1929).

time. Apparently either appliances create more work or women use the time saved elsewhere to keep up with rising standards of housekeeping.[74]

In other words, while the time savings in specific tasks which resulted from the introduction of certain technologies were impressive, the time women spent in total housework ironically did not decline. One reason is that utilities fostered the use of not just large appliances but also many single-task, usually small, appliances. The general effect of much of this equipment was part of the raising of standards of living rather than the saving of time. Today, not only have standards risen, but the proliferation of some small appliances has extended rather than eliminated tasks.[75] Thus, the net effect of technological change is not time saving.

As for convenience foods, if preparation for use is the major factor to consider, one could generally conclude that these do save time. Yet the time involved in food producing and/or shopping is usually ignored in time studies of prepared, packaged meal-sized goods. A hundred years ago most Americans produced their own food or relied on local markets for those things they did not grow themselves (consequently there was less variety than today). Moreover, most food was bought in bulk, so that shopping was likely to be a less frequent venture. Today, while prepared foods may save time and effort, this convenience is severely undercut at the supermarket. There we find aisle after aisle of food choices made available by a national marketing system and the wonders of food technologies. The sheer number of choices, together with the need to serve nutritious, attractive, and tasty meals, can increase time for meal planning and food selection. If one shops two or three times a week (each time going to a centralized, i.e., nonlocal, shopping center), makes selections with care, loads the goods into the car, unloads them at home, and puts them away, all of that adds up to considerable time. Although shopping patterns vary—for example, black women tend to shop less frequently than white women and to buy basic ingredients in larger quantities[76]—shopping takes time.

However, we could still make the argument that the smaller meals served today compared with those served fifty years ago have surely decreased the time spent in preparation. Before World War I, the

[74]Berheide et al. (n. 8 above).

[75]Joseph J. Spengler, "Product-Adding vs. Product-Replacing Innovation," *Kyklos* 10 (1957): 249–80; Steffan Lindner, *The Married Leisure Class* (New York, 1972).

[76]Robert F. Dietrich, "Know Your Black Shopper," *Progressive Grocer* 54 (June 1975): 44–46.

average American family ate three large meals a day: breakfast, lunch, and dinner consisted of steak or roast, fried potatoes, cakes or pies, starchy vegetables, hot cakes, and relishes.[77] Today, meals are smaller. Volume alone would seem to suggest less time in the kitchen, irrespective of technologies. However, the larger meals of past eras were made up of similar foods; roast or steak with potatoes was common at all three meals, and probably the breakfast roast was reheated and served at lunch or dinner. Modern meals, in contrast, clearly feature different food types, making three separate preparations common. Urbanization and declining family size may have made meals smaller, but new technologies complicated (and gave variety to) the cooking process.

Unfortunately, our assessment of the time savings due to the technology of convenience foods is necessarily speculative, although not to the same extent as was true for utilities. Since the "scratch" versus convenience studies do not measure and compare shopping, planning, time management, family size, or meal types, their comparisons (that, e.g., a certain convenience food saves a minute and a half over preparing it from basic ingredients) seem meaningless.[78]

Finally, we come to market services. Again, we cannot be definitive, but we believe that market services help save time. A family that eats out often spends less time in meal preparation. Yet much of the use of market services is related not to their technological convenience per se but, rather, to the increase in women's paid employment and the decrease in average family size. Family size and age of children have been found to be extremely significant factors in determining overall time spent in housework and in meal preparation in particular.[79] Furthermore, in the last fifty years the percentage of employed women has more than doubled. This, together with diminishing family size, apparently decreases the time spent on housework. Why? Is it because women have more technological help in the kitchen, or because there is more convenience in market services, or because the volume of housework is less in smaller families or in those with working mothers/wives? The answer is undoubtedly more complex than the existing data can support. We speculate that the availability of market services facilitates a decline in time spent on some forms of household production (e.g., laundry, cooking), a decline that was initially made possible by utilities and some large appliances and by the

[77]Cowan, "Two Washes in the Morning" (n. 14 above).

[78]See, e.g., Harp and Dunham (n. 59 above); and Margolius (n. 60 above).

[79]Kathryn Walker and Margaret Woods, *Time Use: A Measure of Household Production of Family Goods and Services* (Washington, D.C., 1976); Wilson; Vanek (n. 9 above).

lack of availability of a full-time homemaker; however, centralized market services have also meant that an increasing percentage of housework time is spent on consumption tasks.

Technological Impacts on Household Specialization of Labor

Technology began to affect specialization of labor with the long-term trend of industrialization. Prior to the Industrial Revolution, the household had been a center of both production and consumption for all its members. As industrialization began, the household retained its dual character, producing goods for home consumption and for the market economy under the cottage system. The latter function diminished rapidly as centralized factories developed, leaving the home as a center of consumption and socialization. Production for home and market became physically separated. The market economy produced goods for use in the home, rather than developing food, laundry, or child-care services to take these functions from it.[80] Susan Strasser has suggested that this choice was made between 1907 and 1916 when large capital investors found a profitable outlet in the automobile.[81] The concomitant residential dispersion made many group services unprofitable compared with such technologies as appliances and convenience foods which fit the atomized pattern.

As production moved out of the home, the work of household maintenance did not decrease. If anything, standards of output were raised; once the industrial ethic of efficiency and labor saving developed, the home became another site to apply these values. The rationalization of the home was thus dependent on the prior industrialization and rationalization of the outside workplace. The decline in the number of servants early in this century (due in part to immigration restrictions) was seen as a "crisis" given the pressures of efficiency and higher housekeeping standards.

Two social trends in the early 20th century make these connections explicit. The first was the domestic science movement of the 1920s, which attempted to render housework more like industrial management, and the second was the new home economics, which sought to apply microeconomic theory to household production. These movements illustrate how the respective technical and theoretical principles of scientific factory management, as developed by Frederick W. Taylor, were extended to the home by writers such as Christine Fred-

[80]Hartmann (n. 11 above); Gilman (n. 10 above).

[81]Strasser (n. 14 above).

erick and Lillian Gilbreth.[82] Current home economics literature is still full of applications of time- and motion-study techniques.

We argue that, cumulatively, technologies have helped make a reallocation of household labor difficult to accomplish. They have been used to privatize work and thus to increase the work load of many individual women.[83] Housework remains decentralized, conducted inefficiently within many single units. In fact, it may now be difficult to move some housework tasks out of the home.[84] First, the small scale of household work and technologies is labor intensive. Second, the work has become so laden with emotion that attaining a more communalized form may be impossible.[85] Finally, since women's labor at home is unpaid and thus seen as "cheap," it could be indefinitely used for these tasks, retaining the specialization of labor within the home and keeping housework structurally separated from the paid labor market.[86] Bearing these factors in mind, we can now look at the impact of utilities, appliances, foods, and services.

Although it cannot be proved that utilities have had a profound effect on the household specialization of labor, they have reallocated wives' time.[87] This may be owing to appliances as well, but we assume that utilities facilitated at least some of the change. Of course, this trend does not alter the burden of housework but, rather, its content. In household production, as elsewhere, we find a tendency to focus released time on new goods and services rather than more leisure. Utilities undoubtedly made it possible for more women to enter the paid labor force or allowed change in the household separation of labor to occur, but they did not *cause* such changes.

It is also possible that some household appliances have been used as a substitute for more equal allocation of household labor. Husbands do little housework, "spending an average of 1.6 hours a day on all household work, whether or not wives were employed."[88] Studies of

[82]See Christine Frederick, *The New Housekeeping: Efficiency Studies in Home Management* (New York, 1913); Lillian Gilbreth, *The Homemaker and Her Job* (New York, 1927), and *Management in the Home* (New York, 1954). These principles have also been extended to the office, where many women encounter them as clerical workers (see Harry Braverman, *Labor and Monopoly Capital* [New York, 1974]).

[83]Cowan, "Two Washes in the Morning" and "From Virginia Dare to Virginia Slims" (n. 14 above); Gilman (n. 10 above).

[84]Cowan, "From Virginia Dare to Virginia Slims" (n. 14 above); Kneeland (n. 7 above).

[85]Ravetz (n. 40 above).

[86]Davidoff (n. 6 above).

[87]Ogburn and Nimkoff (n. 48 above).

[88]Walker and Woods.

this issue control only for age, class, and number of children, not for equipment. Task-specific technologies may develop so that women can take over tasks previously done by other family members rather than vice versa. When families have garbage disposals, wives are more likely to take care of the garbage; the pattern is similar with dishwashers. In other words, new technologies may reduce the amount of time men engage in housework and increase the time spent by women, a finding which contradicts conventional wisdom.[89] Furthermore, to the extent that appliances are designed for use within the home, they reinforce the separation of women from the paid labor force or increase the reluctance to seek market services.

Convenience foods are often claimed to be a major time-saver and therefore a role-equalizer for the household cook. However, time saved is seen as something to devote to the family, and the ultimate gender-based allocation of household labor does not change. Women's expanded role as consumer[90] has encompassed, of course, the purchasing of the convenience foods that in times past were produced at home. The purchases are also influenced by advertising that indicates which kinds of purchases are appropriate for each sex role.

Services probably had the greatest potential for redefining the household specialization of labor. We know, historically, that households were becoming smaller by 1900 because of the reduction of the extended family and diminishing numbers of boarders and servants. In theory, this change in household composition could have been handled either by applying technological solutions in the home or by bringing household functions into labor-force production modes outside the home. In practice, the former prevailed, and technology was brought into the home where women could now perform all the work previously done by other family members or servants. At this point technology kept women in the home rather than liberating them from it.

More recently, the increasing number of women entering the paid labor force is the trend which has had the largest impact on housework. Studies make it clear that housework time reduction is a function of employment and not of the amount of technology available.[91]

[89]Charles A. Thrall, "The Conservative Use of Modern Household Technology," *Technology and Culture* 23 (April 1982): 175–94; Christine E. Bose, "Technology and Changes in the Division of Labor in the American Home," *Women's Studies International Quarterly* 2 (1979): 295–304.

[90]Batya Weinbaum and Amy Bridges, "The Other Side of the Pay Check: Monopoly Capital and the Structure of Consumption," *Monthly Review* 28 (July–August 1976): 88–103; John Galbraith, "The Economics of the American Housewife," *Atlantic Monthly* 233 (August 1973): 78–83.

[91]Alexander Szalai (n. 67 above); Thrall (n. 31 above); Vanek (n. 33 above).

Employed women substitute nondurable time-savers (e.g., convenience foods, laundries, child care) for their labor, shop at fewer stores on fewer days, and prepare fewer meals at home.[92] They use market services. But married women employed outside the home do not do a significantly smaller proportion of housework than married women who are not so employed,[93] even though less total work is done. Thus women's paid employment changes their own allocation of time but does not change the household specialization of labor. It seems that technological phenomena will not bring about such a change; it will occur only when someone other than the adult woman does the work.

The changes in women's distribution of time between home and work force have not been explained by technology itself as an independent variable, although technology may be an intervening variable which facilitates the change. Rather, the demand for women in the labor force, reduced household size, home monotony, aspects of contemporary feminist thought, and the pressures of inflation have drawn women to paid work, and this has in its turn decreased their time available for housework. The redefinition of housework away from production and toward consumption, transportation, and child care, which technology fostered, has facilitated women's move into the labor force, but it is not likely to have caused the current distribution of women's time between paid and unpaid work. While increased ease of work brought by utilities might have "freed" women, the second-level effects were in the opposite direction. Appliances (like convenience foods) in the home often extend women's role therein. Therefore we predict that ownership of increasing numbers of home appliances is likely to be positively correlated with gender-stereotyped specialization of labor within the household.

More technology is purchased as income increases. Beyond a certain income level, women/wives will be less likely to seek paid employment and be more able to fulfill the mother/wife role prescription, using technologies as means toward such ends. As noted, reallocation of labor among household members has simply not occurred. The content of housework has varied, but women's prime responsibility has gone unmodified by utilities and has probably been extended by appliances. Home technology and specialization of labor by gender, though correlated, are linked by the prior variable of income. (An exception to this trend may be very high-income families where servant labor is used in the home. However, this is not a statisti-

[92]Strober (n. 25 above); Vaugh (n. 54 above).
[93]Berheide et al. (n. 8 above).

cally significant number of families, and the outcome is not caused by technology but, rather, by purchased personal services.)

At this juncture, only labor-market solutions to housework offer the prospect of relieving women's burden. The proliferation of fast-food services indicates that some chores are moving out of the home. Others, such as child or laundry care, remain centered in the home. The service sector of the economy is clearly growing. It remains to be seen whether the services are oriented toward housework and who provides them. Women moving into paid work may be providing the same services in the labor force as they do in the home. In the past, nontechnological changes, such as those in labor force or household composition, have had the greatest impact on household specialization of labor, and we can expect future changes to emanate from this source, too. In other words, if men begin to do more housework, it will likely be the result of social and cultural trends, not new technologies.

Conclusions

We can now ask to what extent popular beliefs about technology and housework are true. First, there is the popular assumption that technology has made housework easier. Certainly market services have eased some elements of work, and convenience foods may also have reduced fatigue. As for utilities, we can only surmise that, while they did reduce fatigue, their secondary effects created more and new forms of housework. None of the technologies increased general pleasantness of housework, made tasks interesting, or improved the sense of self-worth of the housewife.

Second, the popular belief that technology makes housework less expensive is not well supported. The impact of utilities on cost cannot be measured, while appliances and convenience foods are more expensive. Only market services appear to be potentially cheaper than work in the home, but this is contingent on placing an economic value on the homemakers' labor.

Third is the time factor, for which popular belief would lead us to expect a decrease. However, we find that if time is saved by some technological means, the saving is offset by concomitant activities and by maintaining the new technological systems. In the past, the most significant factors contributing to saving time in meal preparation were nontechnological, such as smaller families and the increased labor-force participation of women. Now, real savings can be realized primarily by removal of this activity from the home.

Finally, popular belief has it that technology has made for less

housework and thus for a redistribution of household labor among household members. However, the evidence (as opposed to anecdotes) indicates that household specialization of labor probably has not changed over time and may actually have become more burdensome to women. Advertising still shows housework as women's work. Ironically, appliances have often fixed and extended women's traditional household roles. The time and energy saved from tasks previously performed have merely been reallocated to new consumption and family care tasks for women. The content mix of housework has changed, even if the gender specialization of labor has not.

Any changes in women's distribution of time between home and outside work have not been explained by technology itself as an independent variable, although technology may facilitate the process of increasing female labor-force participation. Despite a conventional wisdom which asserts that technological change in the home allowed or directly led to increased female labor-force participation during the period of the most intensive industrialization of the home (the 1920s and 1930s, with the large-scale deployment of utilities and large appliances), middle-class women receiving these new domestic amenities did not, by and large, seek employment outside the home. Rather, reduced household size and increased women's labor-force participation have cut into the time spent on housework. But the proportion of housework tasks done by women remains the same. Actual relief of women's prime responsibility for housework may come only with the development and improvement of further private-market services for the household such as those already available in the fast-food industry.

Thus, when we finally look at who has benefited from household technologies, women do not appear to have been the primary beneficiaries. While technologies may have decreased the physical effort of housework, they have not reduced the time involved, alleviated the psychic burdens, altered the allocation of labor by gender, or released women to enter the paid labor force. The acquisition of household technologies is primarily related to one's stage in the life cycle and to economic means, not to women's entry into paid work. It is likely that purchasers believe that appliances and convenience foods do save time, effort, or costs. Often purchases have symbolic connotations as well. Overall, however, household technologies have led to less satisfaction with the work environment and to the proletarianization of housework. The greatest influences on time spent on housework have come from nontechnological changes, changes in household size and in paid employment of women. In the past, wives' labor has sub-

stituted for the loss of household service workers and of other (primarily female) family members' aid. In the future, public and market services have the potential to replace home food production and other work, finally lightening women's burden in the home. But an even more equitable and hence preferable solution would involve men taking increased responsibility for the necessary life-support and sustenance activities that constitute housework.